CLEAN AMENDED SPECIFICATION PARAGRAPHS
SERIAL NO. 09/836,685

The paragraph located at page 1, lines 2-4:

95 This application is a continuation-in-part of application serial number 09/372,316, filed August 11, 1999; and is cross-referenced to commonly-assigned application serial number 09/663,850, filed on September 18, 2000 (Attorney Docket No. LUC 2-027-3), the disclosure of which is herein incorporated by reference.

The paragraph located at page 2, lines 12-18:

96 A number of technological advances have made DWDM possible. Once such advance was the discovery that by using fused biconical tapered couplers, more than one signal can be sent on the same fiber. The result of this discovery was an increase in the bandwidth for one fiber. Another important advance was the use of optical amplifiers. By doping a small strand of fiber with a rare earth element, usually erbium, an optical signal can be amplified without converting it back to an electrical signal. Optical amplifiers now are available which provide more efficient and precise flat gain with significant total power output of about 20 dBm.

The paragraph located at page 2, line 31 - page 3, line 5:

97 Given the greater number of channels, and corresponding signals, which can be carried on a single optical fiber, multiplexing and demultiplexing has become increasingly important. Current methods for multiplexing and demultiplexing include the use of thin film substrates or fiber Bragg gratings. For the first method, a thin film substrate is coated with a layer of dielectric material. Only signals of a given wavelength will pass through the resulting substrate. All other signals will be reflected. See, for example, U.S. Patent No. 5,457,573. With fiber Bragg gratings, the fiber optic cable is modified so that one wavelength is reflected back while all the others pass through. Bragg gratings are particularly used in add/drop multiplexers. With these types of systems, however, as the number of transmitted signals increases, so does the number of required films or gratings for multiplexing and demulitplexing. See U.S. Patent No. 5,748,350 and U.S. Patent No. 4,923,271. Therefore, more efficient, less expensive methods for multiplexing and demultiplexing transmitted signals continue to be sought.

The paragraph located at page 4, lines 22-34:

98 Referring to the drawings, Fig. 1 is a schematic representation of an RDOE switching input optical signals emitted by a laser diode assembly onto lenses that are associated with optical fibers. A source is provided, as represented by numeral 10, which source is composed

of one or more input optical signals, each of which is associated with a particular wavelength (λ) or energy. In accordance with the convention in the field, the term "wavelength" is used in this Application to mean one or more wavelengths or a band of wavelengths. Also throughout this application, an "s" in parenthesis following a given element is used to indicate the presence of at least one or more of that element. For example, the term "optical signal(s)" means one or more optical signals. Source 10 in Fig. 1 is provided by a laser diode assembly, however, any other device or combination of devices capable of supplying modulated optical signal(s) may be used. Such a device or devices, for example, may include optical cable or fiber. Source 10 is directed toward the surface of rotatable diffractive optical element (RDOE) 12. RDOE 12 diffracts the input optical signal(s) of source 10 at different angles according to the diffractive equation:

The paragraph located at page 5, lines 11-25:

Three output stations are provided, as at 14, 16 and 18, for receiving the diffracted output optical signals, $\lambda 1$ and $\lambda 2$, as shown at 20 and 22, respectively. With RDOE 12 at a first position as depicted in Fig. 1, output stations 14 and 16 receive output optical signals 20 and 22. Fig. 2 depicts RDOE 12 rotated to a second position, the rotation direction being in the plane parallel to RDOE 12. In this second position, the angle at which the optical signals are diffracted has changed and output optical signals now are directed at output stations 16 and 18. Thus, by rotating RDOE 12, optical signal(s) may be switched among a number of output station(s). Output stations 14, 16, and 18 shown in Figs. 1 and 2 are optical fibers, but the output station(s) may be any mechanism capable of detecting or transmitting an optical signal. A system for switching a source among three output stations illustrates a simple use of the method of the invention. As will be illustrated later, the simplicity of the method facilitates distribution of source of optical signals among a multitude of output stations. A lens assembly for focusing the optical signal(s) is provided in conventional fashion, for example, as shown at 24, 26, and 28 in Figs. 1 and 2. Structure necessary to implement such a lens assembly is not described herein as it is well-known to those skilled in the art.

Table 1 located at page 7, lines 1-4:

TABLE I

	Position 1	Position 2	Position 3
Output Station 1	--	λ1	λ2
Output Station 2	λ1	λ2	λ3
Output Station 3	λ2	λ3	λ4
Output Station 4	λ3	λ4	--

Q10

The paragraph located at page 8, lines 26-36:

Q11

Looking to Fig. 6, a top view of the optical connectors illustrated in Fig. 5 is shown. The components of Fig. 6 retain the numeration of Fig. 5. RDOE 12 is rotatable to eight positions, shown at 154, 156, 158, 160, 162, 164, 166, and 168. In each position, wavelengths will be diffracted to optical connectors located along equal lines of longitude (sphere 116, Fig. 5). Note that the RDOE 12 axis of rotation is perpendicular to the grating plane. When RDOE 12 is positioned at position 154, no output optical signals are conveyed to any optical connectors. At position 156, output optical signal λ3 will be received at output station 114. Output stations 110 and 112 will not receive signals. With RDOE 12 in a third position, as shown at 158, output optical signal λ1 will be received at output station 110 by optical connector 134. No output optical signal will be received at output stations 112 and 114. This grating will continue for all 8 positions.

The paragraph located at page 10, line 16 - page 11, line 6:

Q12

The present invention, then, includes directing of output optical signal(s) to one or more output stations by varying the effective spacing of a diffractive optical element through rotation. One embodiment for RDOE 12 involves the use of a diffraction grating on a thin film that is connected to an energy source, energizable for movement of the film. Such movement changes the effective spacing of the diffraction grating on the film. A diffractive grating or hologram may be embossed on the thin film to form the diffractive grating. The film may be polyvinylidene fluoride (PVDF) or any other piezoelectric film that deforms by a small amount when subjected to an electric field. The diffractive grating or hologram embossed on the thin film is rotated about a pivot point located at any position along the thin film. This pivot point may be, for example, at either end or at the center of gravity. The energy source, energizable to move the thin film, may be provided in any number of electromagnetic configurations. One such configuration includes

the combination of an energizable coil, or multiple coils, with the thin film, the combination being pivoted at the center. Magnets are located either below or to the sides of the film such that when the coils are energized, a magnetic flux is created and the film with its diffractive grating rotates about the pivot axis. Such structures are described in further detail in U.S. Patent No. 5,613,022, entitled "Diffractive Display and Method Utilizing Reflective or Transmissive Light Yielding Single Pixel Full Color Capability," issued March 18, 1997, which hereby is expressly incorporated herein by reference.

a12 cont

The paragraph located at page 12, lines 1-9:

a13

Turning now to Fig. 7B, a side view of the RDOE of Fig. 7A is shown revealing the connection of the above-described elements to a printed circuit board. Numeration from Fig. 7A is retained. Printed circuit board (PCB) 202 is seen to have ground plane 204 and + voltage bus 206. FET 190 is connected in series with conductor 188, ground connector 208 and + voltage connector 210 (Fig. 1) being connected to ground plane 204 and + voltage bus 206, respectively. Similarly, the capacitance sensor located on stop 194 is connected to ground plane 204 at 216 and + voltage bus 206 at 212. The connection of elements to PCB 280 is intended to be illustrative and not limiting of the present invention, as it will be obvious to those skilled in the art that other arrangements may be provided.

The paragraph located at page 12, lines 10-23:

a14

In addition to RDOEs involving manipulated films or pivoted magnets or coils, the present invention may be implemented using one of a number of planar rotational embodiments of RDOE 12. For each of these embodiments, an array of facets may be achieved on the RDOE by providing a single diffraction grating of constant spacing or an array of diffraction gratings, each of which may have a different spacing wherein each diffraction grating element of the array may be disposed in juxtaposition or may be spaced apart, or by using a holographic diffraction grating array wherein the array of facets are superimposed. With a single diffraction grating, a facet is associated with each rotational position of the faceted rotatable element (FRE), thus creating an array of facets to an observer. Where each facet of the array is a separate diffraction grating, the facets may be non-uniformly or uniformly placed along or across RDOE 12, however, the location of each facet within the array is known, for example, each location can be stored in the memory of a microprocessor. With the location of each facet in the array known, the RDOE may be rotated such that input signal(s) illuminate select facet(s). Thus, desired output signal(s) are generated and directed to appropriate output station(s).